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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,578	03/19/2004	Fernando Gonzalez	11675.83.2.1.1	7290

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EXAMINER	
LOKE, STEVEN HO YIN	
ART UNIT	**PAPER NUMBER**
2811	

DATE MAILED: 06/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/804,578	GONZALEZ ET AL.	
	Examiner	Art Unit	
	Steven Loke	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *18-24 and 33-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *33,34 and 36-39* is/are allowed.

6)☒ Claim(s) *18-24 and 35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/9/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. Applicant's election without traverse of claims 18-24 and 33-39 in the reply filed on 4/28/05 is acknowledged.

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

3. The disclosure is objected to because of the following informalities: It is believed that the reference numeral for the silicon substrate is "20" instead of "10" (page 13, line 3). In page 13, line 10, the phrase "1x1019 to about 5x1021 atoms per cm3" is not understood. Is it being referred to "$1x10^{19}$ to about $5x10^{21}$ atoms per cm^3"? In page 14, lines 2-3, the phrase "1x1016 to about 1x1019 atoms per cm3" is not understood. Is it being referred to "$1x10^{16}$ to about $1x10^{19}$ atoms per cm^3"?

Appropriate correction is required.

4. Claims 18-24 and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 18, lines 8-10, the phrase "the second doped region having a lower periphery that is substantially planar and substantially parallel to the substrate" is vague and indefinite as to which part of the substrate is parallel to the lower periphery of the second doped region. Is the top surface of the substrate parallel to the lower periphery of the second doped region?

Claim 20, lines 5-6, claim 35, lines 5-6, the phrase "the second doped region having a lower periphery at a depth that is less than about 1750 Å" is vague and indefinite as to how to measure the depth of the second doped region. Fig. 3 discloses a depth of the

inner portion [26] is less than about 1000 angstroms from a top surface of the substrate and fig. 4 discloses each of the lightly doped regions [28] extends below and beyond a corresponding lightly doped region [26] by a depth of about 250 angstroms to 750 angstroms. Therefore, it is recommended that the phrase should rewrite as "the second doped region having a lower periphery at a depth that is less than about 1750 Å from a top surface of the substrate".

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 18-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 18 and 19 of U.S. Patent No. 5,897,363 (Gonzalez et al.). Although the conflicting claims are not identical, they are not patentably distinct from each other because both of them disclose the similar claimed subject matters.

In regards to claim 18, Gonzalez et al. teach a method of forming an electrical structure on a substrate. The method comprising: performing a plasma doping (PLAD) operation to form a first doped region in a substrate (lines 9-14 of claim 18 of the

patent); and performing a second doping operation, the second doping operation comprising depositing dopants in the first doped region (since the implantation energy of the second dopant is within the range of the implantation energy of the first dopant, the second dopants are also formed in the first doped region.) and in a second doped region that is contiguous with and extends below the first doped region, wherein the first doped region has a higher dopant concentration than the second doped region (lines 15-22 of claim 18 of the patent), the second doped region having a lower periphery that is substantially planar and substantially parallel to a top surface of the substrate (entire claim 19 of the patent).

In regards to claim 19, Gonzalez et al. (claim 18, lines 9-14 of the patent) inherently disclose performing a PLAD operation to form a first doped region in a substrate comprises performing the PLAD operation to form the first doped region having a dopant concentration that terminates relatively abruptly at an uneven lower periphery because of the uneven distribution of the heavier atoms of the carrier gas in the semiconductor substrate during the PLAD process.

In regards to claim 20, Gonzalez et al. further disclose performing a PLAD operation to form a first doped region in a substrate comprises forming the first doped region having a lower periphery at a depth of less than about 1000 Å (lines 9-14 of claim 18 of the patent); and performing a second doping operation comprises forming the second doped region having a lower periphery at a depth that is less than about 1750 Å and at least about 250 Å greater than the depth of the lower periphery of the first doped region (lines 15-22 of claim 18 of the patent).

7. Claims 21, 23 and 24 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

8. Claims 33, 34 and 36-39 are allowed.

9. The following is a statement of reasons for the indication of allowable subject matter: The first major difference in the claims not found in the prior art of record is annealing the substrate after at least one of the second doping operation and the PLAD operation to cause a more uniform distribution of dopants. The second major difference in the claims not found in the prior art of record is the first doped region has a dopant concentration in a range from about $1x10^{19}$ dopant atoms/cm^3 to about $5x10^{21}$ dopant atoms/cm^3, the second doped region has a dopant concentration in a range from about $1x10^{16}$ dopant atoms/cm^3 to about $1x10^{19}$ dopant atoms/cm^3, and the second doping operation being conducted in a medium power implanter operating in a range of from about 0 KeV to about 200KeV. The third major difference in the claims not found in the prior art of record is the first doped region and the second doped region form a portion of an electrical device that is selected from the group consisting of a diode, a resistor, and a transistor. The fourth major difference in the claims not found in the prior art of record is the second doped region having at least a portion thereof that underlaps the bottom surface of the gate region.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Loke whose telephone number is (571) 272-1657. The examiner can normally be reached on 8:20 am to 5:50 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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May 30, 2005

Steven Loke
Primary Examiner